

# Linear Accelerometer

## SA-220RHT & SA-225RHT

Columbia Models SA-220RHT and SA-225RHT Force Balance Accelerometers have been designed as Measurement While Drilling (MWD) sensors for use in down hole well service applications. The Model SA-220RHT operates from  $\pm 15\text{VDC}$  and is capable of operating at temperatures of up to  $200^\circ\text{C}$ . Model SA-225RHT requires  $\pm 5\text{VDC}$  and operates to  $190^\circ\text{C}$ . Both sensors are completely self-contained and provide a high level, low impedance output eliminating the need for high temperature signal conditioning.

In addition to exceptional high temperature performance, rugged construction and low power consumption have made the SA-220RHT and SA-225RHT sensors the accepted standard for use in down hole high temperature mapping.

**Consult the factory for customized versions of this sensor.**

### SPECIFICATIONS

Operational	SA-220RHT	SA-225RHT
Ranges Available	$\pm 1\text{G}$ to $\pm 10\text{G}$	$\pm 1\text{G}$ to $\pm 5\text{G}$
Output Voltage	$\pm 5$ Volts $\pm 2\%$ into 100K Load	$\pm 3$ Volts $\pm 2\%$ into 100K Load
Excitation	$\pm 15\text{VDC}$ <40mA	$\pm 5\text{VDC}$ <20mA
Case Alignment	$<0.5^\circ$	
Non-Linearity	$\pm 0.05\%$ F.R.	$\pm 0.10\%$ F.R.
Hysteresis	$\pm 0.07\%$ F.R.	$\pm 0.15\%$ F.R.
Non-Repeatability	$\pm 0.10\%$ F.R.	$\pm 0.15\%$ F.R.
Resolution	$<0.001\%$ F.R.	$<0.002\%$ F.R.
Zero Bias	$\pm 0.15\%$ F.R.	$\pm 0.25\%$ F.R.
Zero Bias Temp. Coefficient	$\pm 0.002\%$ F.R./ $^\circ\text{C}$	$\pm 0.003\%$ F.R./ $^\circ\text{C}$
Scale Factor Temp. Coefficient	$\pm 0.025\%/^\circ\text{C}$	
Natural Frequency	50Hz to 300Hz Dependent on Range	50Hz to 250Hz Dependent on Range
Damping Ratio	0.6 to 1.0	$0.7 \pm 0.2$
Cross Axis Sensitivity	0.01 G/G	

### Environmental

Temperature, Operating	-40 to $+200^\circ\text{C}$	-40 to $+190^\circ\text{C}$
Temperature, Storage	-50 to $+200^\circ\text{C}$	
Random Vibration (2 to 2000 Hz)	25 G RMS, 0.5" Disp. D.A	
Shock Survival	500G, 0.5mS	

### Physical

Weight	3.34oz (94.7gm)
Size	1.13" Sq. x 2.285"H (2.9cm Sq x 5.8"H)
Case Material	Nickel Plated Aluminum
Sealing	Environmental
Electrical Interface (Standard)	6 Terminal Pins

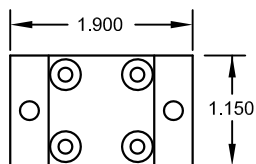


FIG. 1 - VERTICAL MOUNTING PLATE  
COLUMBIA P/N AFB04418P01

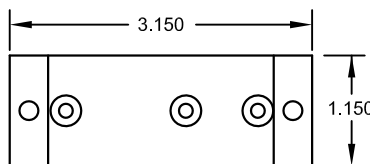
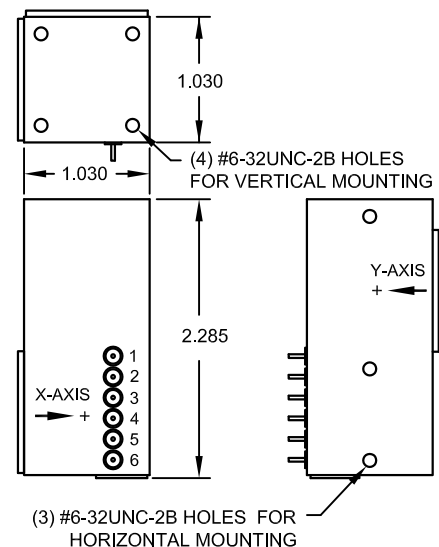


FIGURE 2 - HORIZONTAL MOUNTING PLATE  
COLUMBIA P/N AFB04418P02

- **Biaxial Sensors**
- **Choice of Power Options**
- **$200^\circ\text{C}$  &  $190^\circ\text{C}$  Operation**



### I/O Connector Pin Functions:

SA-220RHT		SA-225RHT	
Pin	Function	Pin	Function
1	+15VDC	1	+5VDC
2	Ground	2	Ground
3	-15VDC	3	-5VDC
4	X Output	4	X Output
5	Ground	5	Ground
6	Y Output	6	Y Output
Pins 2 & 5 are common ground to pwr supply and both outputs		Pins 2 & 5 are common ground to pwr supply and both outputs	

### Ordering Information:

SA-220RHT ( $\pm\text{XG}$ )

SA-225RHT ( $\pm\text{XG}$ )

**Standard Accelerometer**

Range  $\pm\text{XG}$  Required

Optional Vertical Flange (See Fig. 1)

Optional Horizontal Flange (See Fig. 2)

